S/193/61/000/010/005/008
A004/A101

AUTHOR: Khudyakov, M.P.

TITLE: The K-155 field resistance welder for rail welding

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 10, 1961, 31-33

TEXT: The Institut elektrosvarki im.Ye.O. Patona (Electric Welding Institute im. Ye.O. Paton) has developed and, in cooperation with TsNII and the Glavnoye upravleniye puti Ministerstva putey soobshcheniya (Head Administration of Railways of the Ministry of Transport) has put into service the new K-155 field resistance welder for the welding of R-38, R-43, R-50 and R-65 type rails. The welder consists of the housing with the travel and setting mechanisms and centering clamping jaws, hydraulic servo system and two welding transformers. The welder housing is made in the form of two vise-like clamps mounted on a central axle and placed on the rails being welded from above in a suspended position. The clamps are actuated by hydraulic cylinders via a lever system. A special hydraulic servo-system mounted on the central axle is intended for variations of the closing and opening speed of the vises and for the setting. The author gives a brief description of the welder design and points out that the jaws, secondary

Card 1/2

The K-155 field resistance welder for rail welding

S/193/61/000/010/005/008
A004/A101

transformer circuits and current-carrying rods are water-cooled. Depending on the work being carried out the welder and hydraulic cabinets, electric station, etc. can be combined in three different welding assemblies. The following technical specifications are given: -capacity at 50% switching-on time - 110 tons; maximum setting force - 30 tons [Abstracter's note: also the figure 900 tons is given under the above heading]; output when welding heavy rail types - 10 joints per hour; electric power consumption per welding joint during the welding of heavy rails - 2-2.5 kw-h; water consumption of the cooling system and hydraulic container - 20 liter/min; overall dimensions (length x width x height) - 1,390 x x 810 x 910 mm; weight (the hydraulic system being filled with oil) - 1,950 kg. There is 1 figure.

Card 2/2

YERGALIYEV, A.Ye.; BABINOVICH, V.L.; OSIPOV, A.V.; YURKOV, V.N.; KHUDYAKOV, M.T.

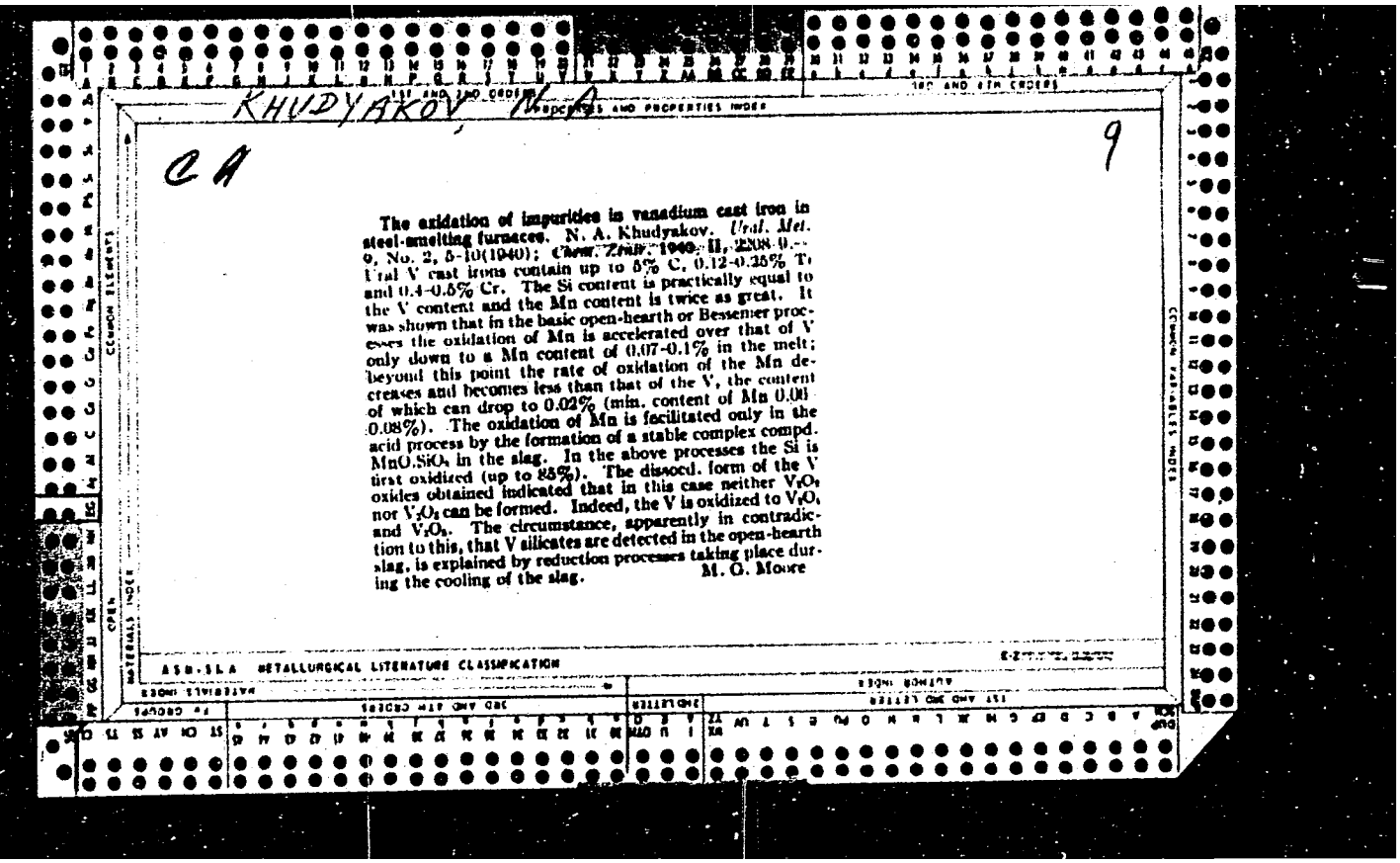
System of mining the Berezovskiy Mine. Trudy Alt. GMNII AN Kazakh. SSR 10:12-34 '61. (MIRA 14:9)
(Altai Mountains--Mining engineering)

BELOV, V. B., gornyy inzh.; ZHAVLYUCHENKO, A. I., gornyy inzh.; KHUDYAKOV, M. Ya., gornyy inzh.; SHENDEROVICH, I. M., gornyy inzh.; SONKIN, V. D., gornyy inzh.

Anchor bolting in hydraulic mines. Ugol' Ukr. 6 no.10:31-32 O '62. (MIRA 15:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut gidrodobychi uglya.

(Donets Basin—Hydraulic mining)
(Mine roof bolting)



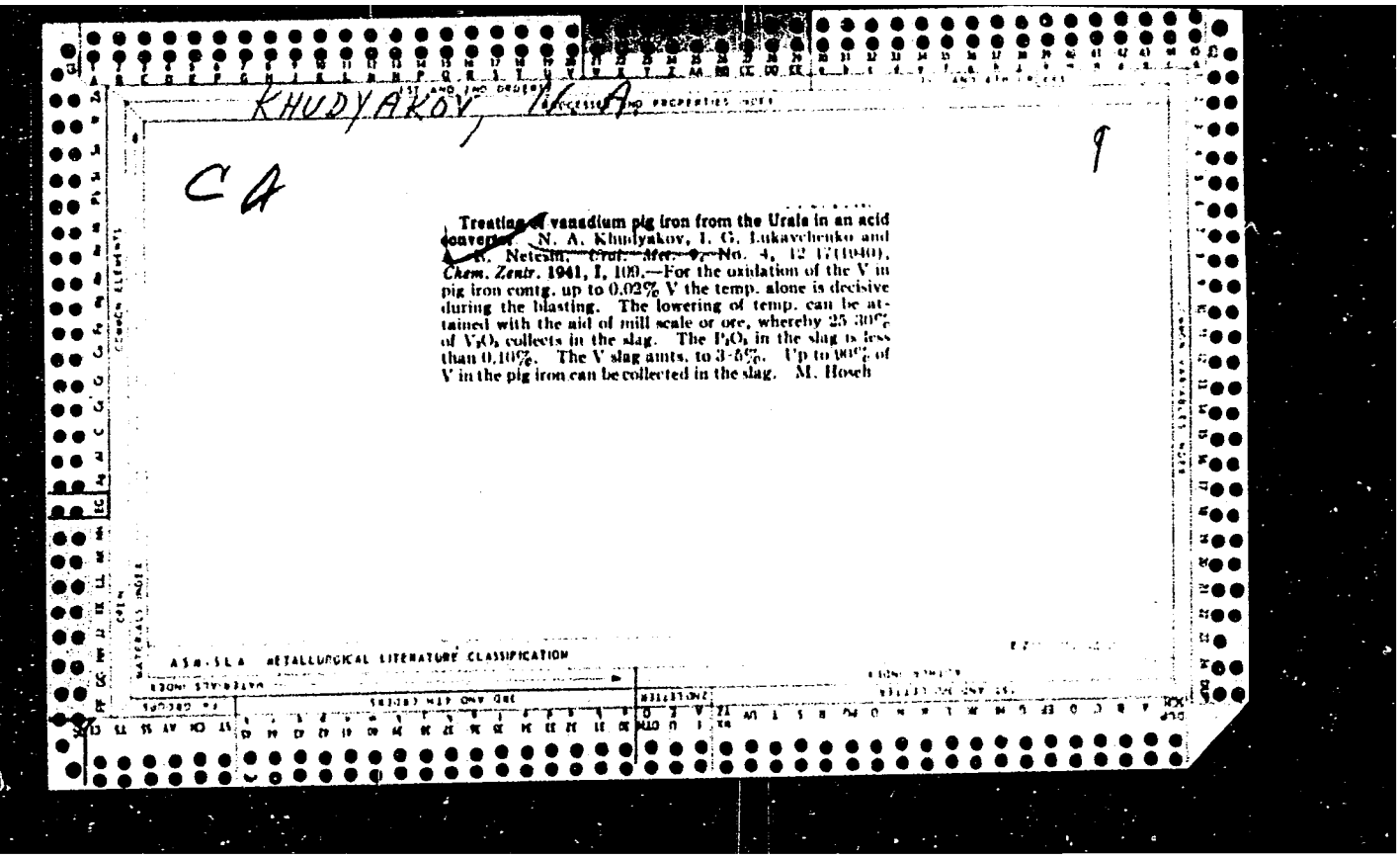
KHUDYAKOV, N. A.

CA

9

The oxidation of impurities in vanadium cast iron in steel-smelting furnaces. N. A. Khudyakov. *Ural. Met.* 0, No. 2, 5-10(1940); *Chem. Zentr.*, 1940, II, 2208.—0 Ural V cast irons contain up to 5% C, 0.12-0.35% Ti and 0.4-0.5% Cr. The Si content is practically equal to the V content and the Mn content is twice as great. It was shown that in the basic open-hearth or Bessemer processes the oxidation of Mn is accelerated over that of V only down to a Mn content of 0.07-0.1% in the melt; beyond this point the rate of oxidation of the Mn decreases and becomes less than that of the V, the content of which can drop to 0.02% (min. content of Mn 0.08-0.08%). The oxidation of Mn is facilitated only in the acid process by the formation of a stable complex compd. $MnO.SiO_2$ in the slag. In the above processes the Si is first oxidized (up to 85%). The dissocd. form of the V oxides obtained indicated that in this case neither V_2O_3 nor V_2O_5 can be formed. Indeed, the V is oxidized to VO_2 and V_2O_4. The circumstance, apparently in contradiction to this, that V silicates are detected in the open-hearth slag, is explained by reduction processes taking place during the cooling of the slag.

M. O. Moore



KHUDYAKOV, N. A.

CA

9

Treating of vanadium pig iron from the Urals in an acid converter. N. A. Khudyakov, I. G. Lukavchenko and A. K. Netesin. *Trud. Ural. Nauch.-Issled. Inst. Chern.* No. 4, 12-17(1940); *Chem. Zentr.* 1941, I, 109.—For the oxidation of the V in pig iron contg. up to 0.02% V the temp. alone is decisive during the blasting. The lowering of temp. can be attained with the aid of mill scale or ore, whereby 25-30% of V_2O_5 collects in the slag. The P_2O_5 in the slag is less than 0.10%. The V slag amts. to 3-5%. Up to 90% of V in the pig iron can be collected in the slag. M. Hoseh

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KHUDYAKOV, N.A.

PHASE I BOOK EXPLOITATION SOV/4607

Koordinatsoye soveshchaniye po primeneniyu kisloroda na metallurgicheskikh zavodakh Urala. Sverdlovsk, 1956

Primeneniye kisloroda na metallurgicheskikh predpriyatiyakh Urala; materialy koordinatsionnogo soveshchaniya (Use of Oxygen in Metallurgical Plants of the Urals; Materials of the Coordination Conference) Sverdlovsk, 1960. 152 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Ural'skiy filial. Institut metallurgii; Ural'skiye pravleniya nauchno-tekhnicheskikh obshchestv chernoy i tsvetnoy metallurgii.

Resp. Ed.: P.S. Kusakin, Candidate of Technical Sciences; Tech. Ed.: N.F. Seredkina.

PURPOSE: This collection of papers is intended for scientific research and technical personnel in the field of metallurgy.

COVERAGE: The use of oxygen in ferrous and nonferrous metallurgy of the Urals is discussed. Results of experimental use of oxygen in some metallurgical plants are presented. During the Conference, held December 20 and 21, 1956, the following persons (in addition to the authors) took part in the discussion: V.Ya. Miller, V.V. Mikhaylov, P.Ya. Sorokin, A.A. Perestoronin (all affiliated with the Institute of Metallurgy of the Ural Branch AS USSR), S.M. Kasachenko (Nizhne-Saldinskiy metallurgicheskiy zavod - Nizhnyaya-Salda Metallurgical Plant), M.F. Kochin (Deceased) (Ural'skiy institut chernykh metallov - Ural Institute of Ferrous Metals), M.Ye. Kisl'itsin (Chelyabinskiy metallurgicheskiy zavod - Chelyabinsk Metallurgical Plant), G.V. Demin (Krasnoural'skiy medeplavil'nyy zavod - Krasnoural'sk Copper Smelting Plant), V.A. Aglitskiy (Institut Unipromed' - "Unipromed'" Institute). Some of the papers are followed by references, both Soviet and non-Soviet.

SOV/137-58-7-14367

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 60 (USSR)

AUTHORS: Khudyakov, N.A., Krivonosov, V.S., Privalov, I.I., Vecher, N.A., Petrov, G.A.

TITLE: Open-hearth Procedures With Oxygen-enriched Air (O tekhnologii martenovskogo proizvodstva stali s primeneniyem kisloroda dlya obogashcheniya vozdukha)

PERIODICAL: Byul. nauchno-tekhn. inform. Ural'skiy n.-i. in-t chernykh metallov, 1957, Nr 3, pp 50-63

ABSTRACT: The experience of the Novo-Tagil Metallurgical Kombinat in using O_2 in its 380-t furnaces is presented. Only magnesite was used to service the furnaces. Charging was performed in from 1 hr to 1 hr 20 min. Melt-down time was significantly reduced. Utmost removal of P is facilitated by running off the slag without keeping it in the furnace. Slags from heats in which O_2 is used are characterized by higher basicity. The formation of the slag is accelerated. During the period when the O_2 operation of the furnace was being developed, an elevated C % was noted, but all conditions exist to attain a faster rate of C burn-off. [Mn] in heats with O_2 is somewhat higher

Card 1/2

Open-hearth Procedures With Oxygen-enriched Air

than in heats without O_2. [P] dropped to 0.012% instead of 0.02% in heats without the use of oxygen. The use of O_2 has a favorable effect on [S] although it is the lower, the more rapid the conduct of the heat. The following conclusions are drawn from the experimental heats conducted: use of O_2 increased output per open-hearth furnace by 15.6%; charging-box capacity should be raised from 1.24-1.75 m^3. The time required to heat the charge can be reduced to 40 or 50 min. Further increase in output depends upon organizational and technical measures, including an increase in the dimensions of the smelting volume of the furnace.

M.P.

1. Open hearth furnaces--Performance 2. Oxygen--Applications

Card 2/2

S/137/60/000/011/004/043
A006/A001

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No. 11, p.49, # 25585

AUTHORS: Krivonosov, V.S., Khudyakov, N.A.

TITLE: The Effect of Blowing Oxygen Through Steel to Eliminate Phosphorus and Sulfur

PERIODICAL: Byul. nauchno-tekhn. inform. Ural'skiy n.-i. in-t chern. metallov, 1959, No. 7, pp. 3 - 7

TEXT: When blowing MeO_2 in 380-ton open hearth furnaces during the melting period the P and S content by the moment of completed melting were lower by 0.017-0.015% and 0.006-0.008% respectively than during O_2 supply to the flame only; in the finished metal P and S were lower by 0.008 and 0.005% respectively. In experimental heats the slag at the molten stage showed a high basicity (2.4 - 3.0) and a high content of Fe oxides ($\sum$ FeO = 16-27). The content of Fe oxides in the slag prior to plain bubbling and deoxidation did not differ from conventional heats.

Yu.K.

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

GERMAIDZE, Georgiy Yefimovich; KHUDYAKOV, N.A., kand.tekhn.nauk, red.; TSYMBALIST, N.N., red.izd-va; MATLYUK, R.M., tekhn.red.

[Upkeep of open-hearth furnaces] Ukhod za martenovskimi pechami. Sverdlovsk, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, Sverdlovskoe otd-nie, 1960. 75 p. (MIRA 13:6)
(Open-hearth furnaces--Maintenance and repair)

S/133/60/000/012/002/015
A054/A027

AUTHORS: Rybakov, L.S., Khudyakov, N.A., Krivonosov, V.S., and Nagovitsyn, D.F.

TITLE: Producing Killed Steel With Oxygen Blown Into the Bath of the Open-Hearth Furnace

PERIODICAL: Stal', 1960, No. 12, pp. 1078-1080

TEXT: In view of the successful experience with oxygen in intensifying the firing of open-hearth furnaces and in the production of rimming steel (blowing oxygen through the bath) the NTMK investigated the possibilities of applying oxygen in the production of killed steel (rail, tube and other carbon steels), both for intensifying the burning and for blowing through the bath, in 1958. The main purpose of the tests was to establish the effect of blowing oxygen into the bath on the technology of melting and the quality of steel. The tests were carried out in high-capacity open-hearth furnaces, with coke-oven coke as fuel and the scrap-ore process. In one of the furnaces (A) oxygen was introduced in the bath through the top, in the other (B) through an equipment arranged at the front. The charge for both furnaces consisted of 62-65% pig iron 35-38% steel scraps, about 5% lime, 8-10% iron ore and agglomerate,

Card 1/4

S/133/60/000/012/002/015
A054/A027

Producing Killed Steel With Oxygen Blown Into the Bath of the Open-Hearth Furnace

0.5% bauxite. In furnace A oxygen was blown into the bath a few minutes after the melting down of the charge, for 10-65 minutes, at 5-6 atm absolute pressures. For rail steel, the oxygen consumption was 1.71 cu m/t, for medium carbon tube steel 2.65 cu m/t and for low carbon tube steel 3.69 cu m/t. In furnace B oxygen was blown into the bath, 60-90 minutes after the pouring of iron, for 10-60 minutes, at 5-10 atm absolute pressures. The oxygen consumption was 2.75 cu m/t for killed steel and 3.98 cu m/t for rimming steel. The tests, generally, proved that blowing oxygen through the bath either during the melting period, or during the period of killing shortened the duration of melting (when blowing oxygen during the killing period, the melting time is shortened by about 20-25 minutes) raises the furnace output and reduces the fuel and oxygen consumption. The velocity of decarbonization increased, when blowing during melting, by 0.6-1.52% and when blowing after melting down of the charge by 0.42-1.17%. Due to the acceleration of slag forming the dephosphorization and the desulfurization of the metal are quicker and more thorough. The phosphor content of steel produced with oxygen blown in was about 0.002-0.008%

Card 2/4

S/133/60/000/012/002/015
A054/A027

Producing Killed Steel With Oxygen Blown Into the Bath of the Open-Hearth Furnace

less than of the conventional types. In most cases the hydrogen content of the metal decreased without the acidity of the metal increasing. Improvement was found in the composition of slag, as a result of oxygen blowing and the quality of steel was also better. The output of railsteel (first class quality) was about 2% higher than with the conventional process, the waste of low-carbon tube steel produced by the new method was lower (0.82,0.88%) than of the same type of steel produced without oxygen blowing (1.3 and 1.43%). In this respect the best results were obtained when oxygen was blown into the bath during melting. It could also be established that when melting high-carbon steels, blowing oxygen into the bath after melting down is advisable for every kind of steel, irrespective of composition. In the tests G.A. Petrov, N.D. Korneyev, S.N. Golokhmatov, Ye.A. Trunov, B.S.Kanterman took part. There are 2 figures and 2 tables.

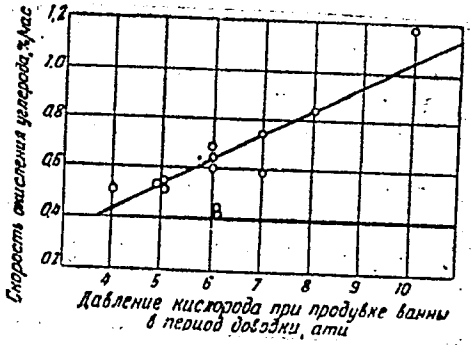
ASSOCIATION: Ural'skiy politekhnicheskiy institut, Ural'skiy naucho-issledovatel'skiy institut chernykh metallov, NMTK (The Ural Polytechnical Institute, The Ural Scientific Research Institute of Iron and Steel, NMTK).

Card 3/4

S/133/60/000/012/002/015
A054/A027

Producing Killed Steel With Oxygen Blown Into the Bath of the Open-Hearth Furnace

Legend to Fig. 1: The dependence of oxidizing velocity of carbon on the oxygen pressure at blowing oxygen into the bath in the period of heat finishing.
Vertical legend: Velocity of carbon-oxidation, %/hour
Horizontal legend: Oxygen pressure during the blowing of oxygen into the bath in the period of heat finishing



Card 4/4

KUL'BATSKIY, Aleksey Pavlovich; BRANDT, V.A., retsenzent; KHUDYAKOV, N.A., red.; CHAPAYKINA, F.K., red. izd-va; TURKINA, Ye.D., tekhn. red.

[Design andoperation of a mixer] Konstruktsiia i rabota miksera. Sverdlovsk, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 100 p. (MIRA 14:12)
(Metallurgical plants—Equipment and supplies)

AFANAS'YEV, S.G., kand.tekhn.nauk; KHUDYAKOV, N.A., kand.tekhn.nauk; VAYNTRAUB, S.S.

Open-hearth furnace of oxygen converter; concerning A.N. Myrtsymov's article published in "Stal'" no.1, 1961. Stal' 21 no.8:695-698 Ag '61. (MIRA 14:9)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (for Afanas'yev). 2. Ural'skiy institut chernykh metallov (for Khudyakov). 3. Alchevskiy metallurgicheskiy zavod (for Vayntraub).
(Open-hearth furnaces)
(Converters)

KHUDYAKOV, N.A.; FILICHEV, V.A.

Automated sand-jet device for cleaning parts with metallic sand.
Mash. i neft. obor. no.9:28-29 '64.
(MIRA 17:11)

1. Kuybyshevskiy dolotnyy zavod.

YEFIMOV, V.I.; KHUDYAKOV, N.V.; SBITNEV, L.P.; ROMANOVSKIY, V.E.; KHOLIN, I.R.; POPOV, V.I.; OSIPOV, G.P.; PISKAREV, V.S.; AGAFONOV, Ye.F.; DORODNOV, P.G.; STRUKACHEV, V.I.; ZAYTSEV, Yu.A.

A.A.Klimov's book "Electricity in animal husbandry." Reviewed by V.I.Efimov and others. Elektrichestvo no.9:87-88 S '56. (MLRA 9:11)

1. Kafedra primeneniya elektricheskoy energii v sel'skom khozyaystve Stalingradskogo sel'skokhozyaystvennog instituta (for Yefimov, Khudyakov, Sbitnev, Romanovskiy, Kholin). 2. Kafedra primeneniya elektroenergii v sel'skom khozyaystve Saratovskogo instituta mekhanizatsii sel'skogo khozyaystva imeni Kalinina (for Popov, Osipov, Piskarev, Agafonov, Dorodnov, Strukachev, Zaytsev). (Electricity in agriculture) (Stock and stockbreeding)

TVERKOVKIN, S.M.; KHUDYAKOV, O.F.

General study of gas wells of the Gaz'i field in Bukhara Province.
Gaz. prom. no.10:4-7 O '58. (MIRA 11:11)
(Bukhara Province--Gas, Natural--Geology)

VELIKOVSKIY, A.S., SAVVINA, Ya. D., YUSHKIN, V.V., KHUDYAKOV, O.F.

Studying the potential of the Leningrad gas-condensate field.
Gaz.prom 5 no.2, 3-8 F '60. (MIRA 13:6)
(Kuban--Condensate oil wells)

VEILKOVSKIY, A.S.; YUSHKIN, V.V.; KHUDYAKOV, O.F.; SAVVINA, Ya.D.

Concise data on some gas-condensate fields of the Soveit Union.
Trudy VNIIGAZ no.17:58-65 '62. (MIRA 15:12)
(Condensate oil wells)

VELIKOVSKIY, A.S.; YUSHKIN, V.V.; STEPANOVA, G.S.; KHUDYAKOV, O.F.

Reservoir losses of condensate. Trudy VNIIGAZ no.17:66-74 '62.
(MIRA 15:12)
(Condensate oil wells)

VELIKOVSKIY, A.S.; YUSHKIN, V.V.; KHUDYAKOV, O.F.; SAVVINA, Ya.D.; STEPANOVA, G.S.

Methods for studying gas-condensate fields. Trudy VNIIGAZ no.17:11-32 '62. (MIRA 15:12)

(Condensate oil wells)

KHUDYAKOV, O.F.

Practice in adapting and starting the UGK-3 apparatus. Trudy VNIIGAZ no.17:52-57 '62. (MIRA 15:12)
(Condensate oil wells—Equipment and supplies)

KHUDYAKOV, O.F.; VELIKOVSKIY, A.S.

Using linear models of a layer in the experimental study of gas recovery in the water-process. Trudy VNIIGAZ no.17:75-98 '62. (MIRA 15:12)
(Condensate oil wells)

VELIKOVSKIY, A.S.; STEPANOVA, G.S.; KHUDYAKOV, O.F.

Conditions causing the penetration of condensates into gas pipeline. Trudy VNIIGAZ no.17:157-162 '62. (MIRA 15:12)
(Gas, Natural—Pipelines)

YUSHKIN, V.V.; KHUDYAKOV, O.F.; SHVADCHAK, N.S.

Investigation of the gas potential of the gas condensate pools of the Bitkov field. Gaz. delo no.12:11-13 '63. (MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza i Ivano-Frankovskaya tsentral'naya nauchno-issledovatel'skaya laboratoriya.

KHUDYAKOV, O.F.

Generalizing certain results of investigations of phase transformations of gas condensate mixtures. Gaz. prom. 9 no.5:11-15 '64. (MIRA 17:6)

MARGULOV, G.D.; TVERKOVKIN, S.M.; KHUDYAKOV, O.F.

Problems and certain results of the test exploitation of the Gazli field. Gaz. delo no.5:3-9 '64 (MIRA 17:7)

1. Bukharaneftegaz (for Margulov). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza (for Tverkovkin, Khudyakov).

KHUDYAKOV, O.F.; SAVVINA, Ya.D.; KARLINSKIY, Ye.D.

Testing wells of the Punignskoye field for condensate. Gaz. prom. 9 no.7:11-15 '64. (MIRA 17:8)

SOKOLOV, V.A.; URINSON, G.S.; KHUDYAKOV, O.F.

Finding the most economical way to develop gas condensate fields with a high condensate content. Gaz. delo no.12:40-46 '63.
(MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza.

YUSHKIN, V.V.; KHUDYAKOV, O.F.

Phase transformations of the reservoir fluids of the gas-condensate beds of the Russkiy-Khutor North field when it is developed by pressure reduction. Gaz. prom. 9 no.11: 6-9 '64. (MIRA 17:12)

VOYTSITSKIY, V.P.; MAKSIMOV, V.P.; KHUDYAKOV, O.F.

Removing condensate from gas in the Shebelinka gas field.
Neft. i gaz. prom. no.3:49-51 Jl-S '64. (MIRA 17:12)

MARGULOV, G.D.; TVERKOVKIN, S.M.; KHUDYAKOV, O.F.

Some problems in setting up the Gazli gas field. Gaz. delo no.7: 3-5 '64. (MIRA 17:8)

1. Bukharaneftegaz i Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza.

KhUDYaKOV, P.

23484. OPYT PLANIROVANIYa LESOMELIORATIVNYKh RABOT V MTC. SOTs. SEL. KhOZ-VO, 1949, № 7, c. 54-59

SO: LETOPIS' NO. 31, 1949.

KHUDYAKOV, P

GALEYEV, Sh.; KHUDYAKOV, P.; KASHCHEYEV, A.; ALADOVA, Ye.I., tekhnicheskiy redaktor [redacted]

[Our mine in the fifth five-year plan: mine no.19 of the Chelyabinsk Coal Combine] Nasha shakhta v piatoi piatiletke; shakhta no.19 kombinata Cheliabinskugol'. Moskva, Ugletekhizdat, 1954. 69 p. (Chelyabinsk--Coal mines and mining) (MLRA 8:7)

KHUDYAKOV, P.

Irrigation

New systems of irrigation. Kolkh.proizv. 12 no. 4, '52.

Monthly List of Russian Accessions, Library of Congress, August 1952. Unclassified.

1. KHUDYAKOV, P.

2. USSR (600)

4. Irrigation

7. Ways to increase labor productivity in irrigation work, Sots. sel. khoz., 24, no. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

Khudyakov, P.A.

KHUDYAKOV, P.A.

Improve the operation of skidding tractors. Mekh. trud. rab. 11 no.10: 14-15 O '57. (MIRA 10:11)

1. Kombinat Kirles.
(Tractors) (Lumber--Transportation)

KHUDYAKOV, P.D., kand. sil'skogospodarskikh nauk

Economic efficiency of the DDP-308 sprinkler. Mekh. sil'. hosp. 9 no. 6:18-19 Je '58. (MIRA 11:7)
(Ukraine--Sprinkler irrigation)

KHUDYAKOV, P.D., kand. sel'skokhozyaystvennykh nauk

Economic aspects of the use of irrigation systems and conditions for the transfer to business accounting. Gidr. i mel. 12 no.11: 3-13 N '60. (MIRA 14:1)

1. Ukrainskiy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii.
(Ukraine—Irrigation farming—Economic aspects)

KHUDYAKOV, P.D., kand.sel'skokhoz.nauk

Economic effectiveness of irrigation in the south of the Ukraine. Gidr. i mel. 13 no.5:21-31 My '61. (MIRA 14:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii.

(Ukraine—Irrigation farming)

KHUDYAKOV, P.I. (Sverdlovsk)

Case of tuberculosis of the kidneys with an outcome in nephrosclerosis. Klin. med. 40 no.12:114-117 D '62. (MIRA 17:2)

1. Iz patologoanatomicheskogo otdeleniya (konsul'tant - dotsent V.A. Bakhtiyarov) Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S. Levchenko).

Khudyakov, P. S.

86-8-19/22

AUTHOR: Khudyakov, P. S., Capt, Pilot-Instructor.

TITLE: Pilot-Instructor's Classification (Klassnost' letchika-instruktora)

PERIODICAL: Vestnik Vozdushnogo Flota, 1957, Nr 8, p. 88 (USSR)

ABSTRACT: In his article Captain P. S. Khudyakov, Pilot-Instructor in an aviation school, suggests that the regulations concerning the classification of pilot-instructors should be revised. According to present regulations, pilot-instructors in aviation schools are awarded their next-in-turn "class" under the same general provisions as those for flyers and navigators of the combat units. This regulation, according to Capt. Khudyakov, is applied without due consideration for the pecularities of the work of pilot-instructors in aviation schools. It is known that the scope of the duties of an aviation school instructor is different from that of flyers of combat units; at the same time, his flying time is greater. However, since the instructors annually start their programs from the beginning, some people get the impression that they remain on the same level of flying training. Actually, the skill of

Card 1/4

Pilot-Instructor's Classification (Cont.)

instruction skills; on this depends the flying training of the young people - replacements for the combat units. That is why it is necessary to establish special classifications for the pilots-instructors of the AF schools.

AVAILABLE: Library of Congress

Card 4/4

KHUDYAKOV, S.I., inzh.

Tensiometric apparatus for measuring pressure pulsations of a water stream. Nauch.zap. MIIVKH 21:328-340 '59. (MIRA 13:8)

(Tensiometers) (Hydraulics)

Khudyakov, V.

BENIKHES, Ye.; KHUDYAKOV, V.

Improving the system for processing grain at the Velikiye Luki hammer mill. Muk.-elev. prom. 23 no.6:26-27 Je '57. (MLRA 10:9)

1. Velikolukskoye oblastnoye upravleniye khleboproduktov.
(Grain milling)

Khudyakov, V.A.

BUNIMOVICH, Lev Danilovich; KHUDYAKOV, V.A., red.; ZHURAVLEV, B.A., red. izdatel'stva; KARASIK, N.P., tekhn.red.

[Special features of cutting lumber with thin-edged circular saws] Osobennosti deleniia pilomaterialov konicheskimi kruglymi pilami. Moskva, Goslesbumizdat, 1957. 37 p. (MIRA 10:12)
(Circular saws)

YAKUNIN, Nikolay Konstantinovich, kand.tekhn.nauk; KHUDYAKOV, V.A., red.; PLESHANOVA, M.I., red.izd-va; KUZNETSOVA, A.I., tekhn.red.

[Sawing small timber on multiple-saw circular sawing machines] Raspilovka tonkomernogo lesa na mnogopil'nykh kruglopil'nykh stankakh. Moskva, Goslesbumizdat, 1960. 82 p. (MIRA 13:9)
(Circular saws)

ACCESSION NR: AP4049852 S/0318/64/000/011/0036/0038

AUTHOR: Bilnov, G. I.; Nedobeshkin, A. Ye.; Khudyakov, V. I.

TITLE: Automatic devices for filling petrochemicals into railway tank cars

SOURCE: Neftepererabotka i neftekhimiya, no. 11, 1964, 36-38

TOPIC TAGS: petrochemical filling device, radioisotope controlled filler, float controlled filler, pneumatically controlled filler, electric level control, tank car filling

ABSTRACT: Filling of railway tank cars is usually done semiautomatically; i.e. the lid is lifted and hose inserted manually but the filling, level determination and closing of the flow is controlled by different filling systems depending on the nature of the liquids. For ammonia and water filling, a radio isotope level control operates an electronic relay which actuates or switches off the flow. Signals are teletransmitted to the control panel of the operator. Controls for low viscosity products are operated by a float set for the desired level and actuating a pneumatic system of valves and signals. Filling can be stopped by a pushbutton. This system cannot handle viscous oils since the float may get stuck. For such products, a purely pneumatic control is provided in which the sampling tube is blown through with compressed air after each operation. For filling tanks with acids, such as

Card 1/2

ACCESSION NR: AP4049832

sulfuric acid, electrodes are fixed at the desired level. When it is reached, a relay circuit is closed and valves are shut. During actual tests of these systems in the field it was found that motors actuating the filling valves are too weak to open and close the gates, especially in wintertime when the oil thickens. The reliability of these motors must therefore be improved. Schematic diagrams of the 3 main systems are provided. Orig. art. has: 3 figures.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: FP,IE

NO REF SOV: 000 OTHER: 000

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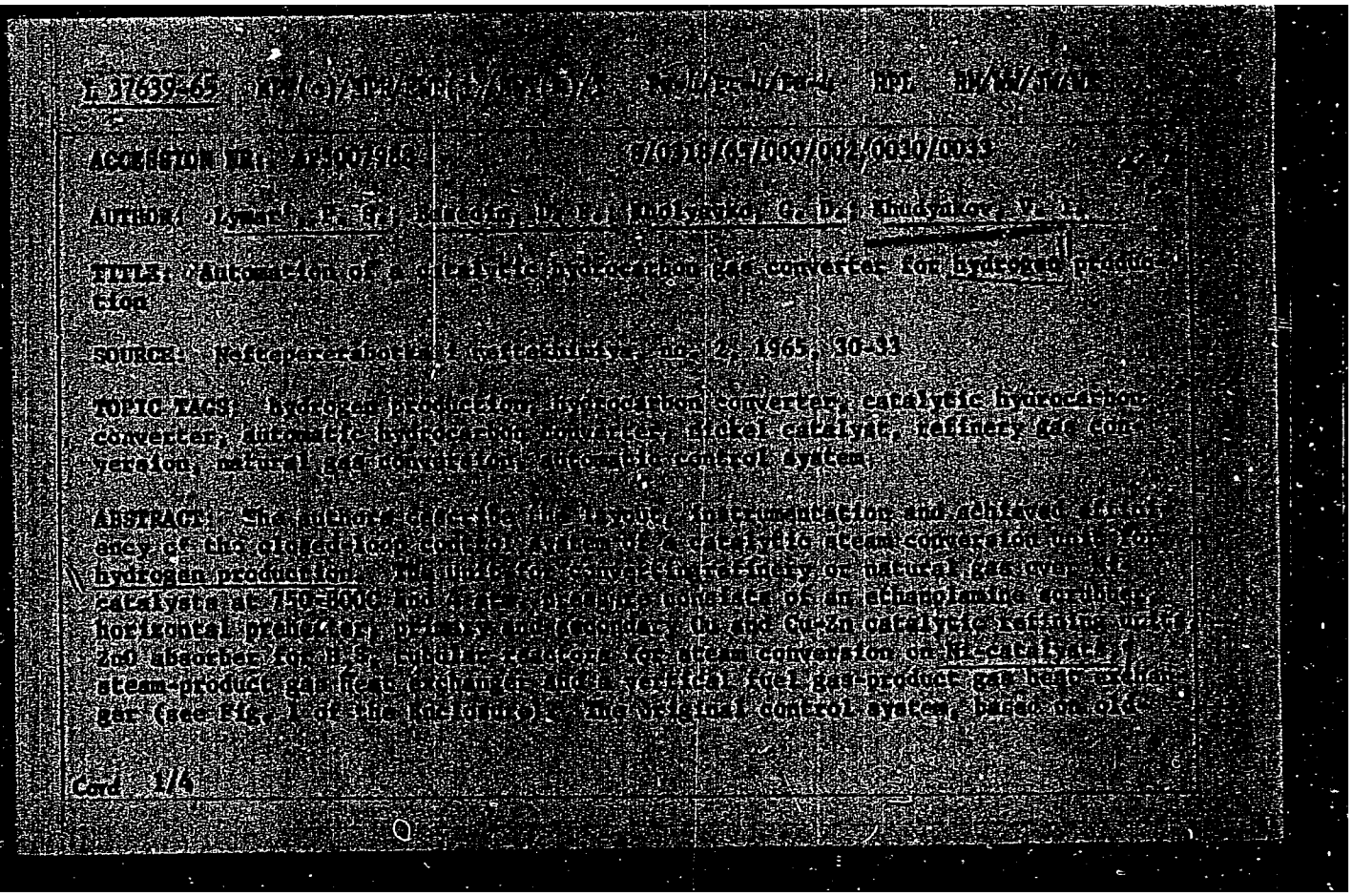

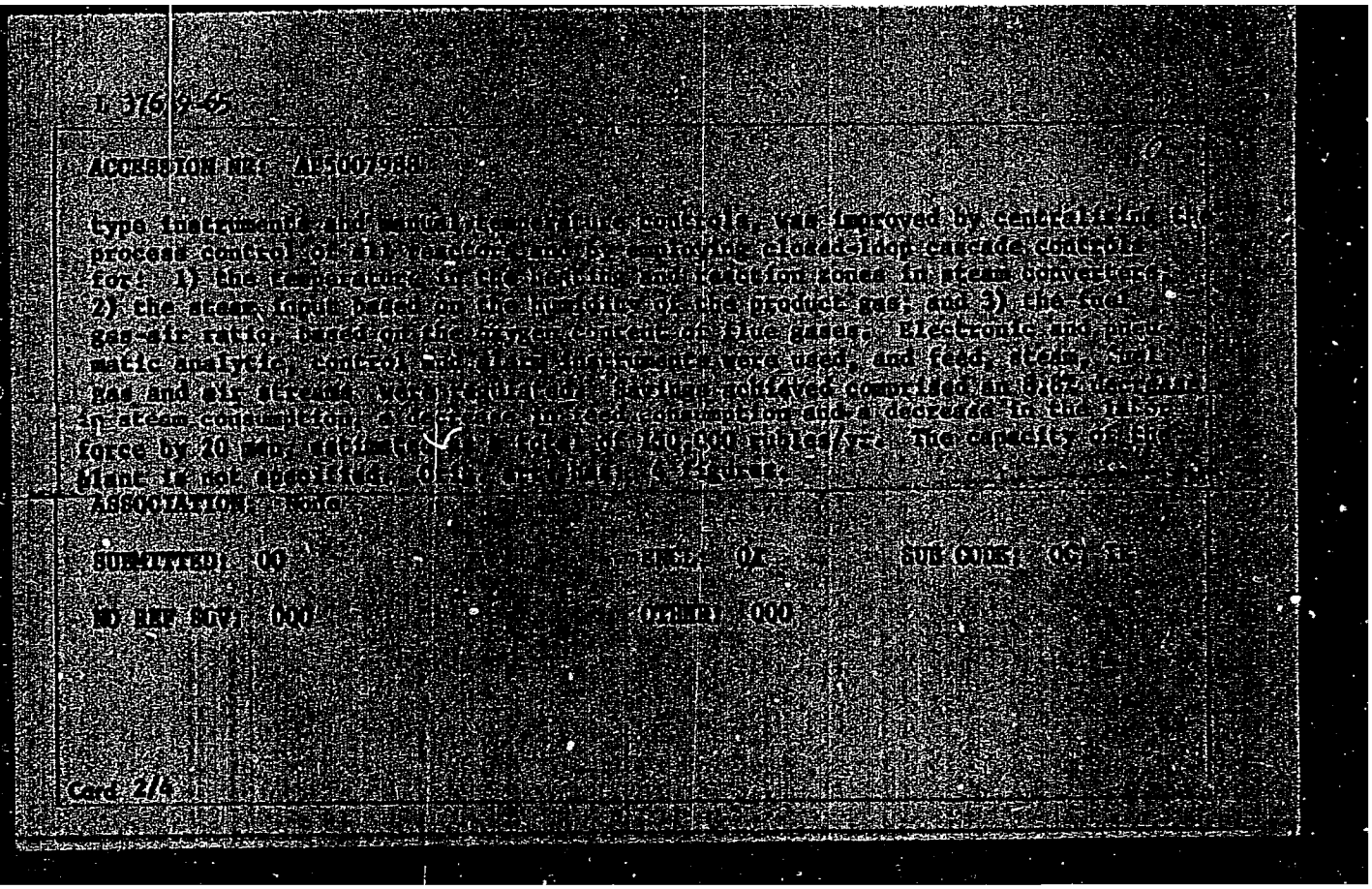

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ACCESSION NR: AP5007988

ABSTRACT: [illegible]

SUBMITTED: 04 ENCL: 02 SUB CODE: GC

NO REF SOV: 000 OTHER: 000

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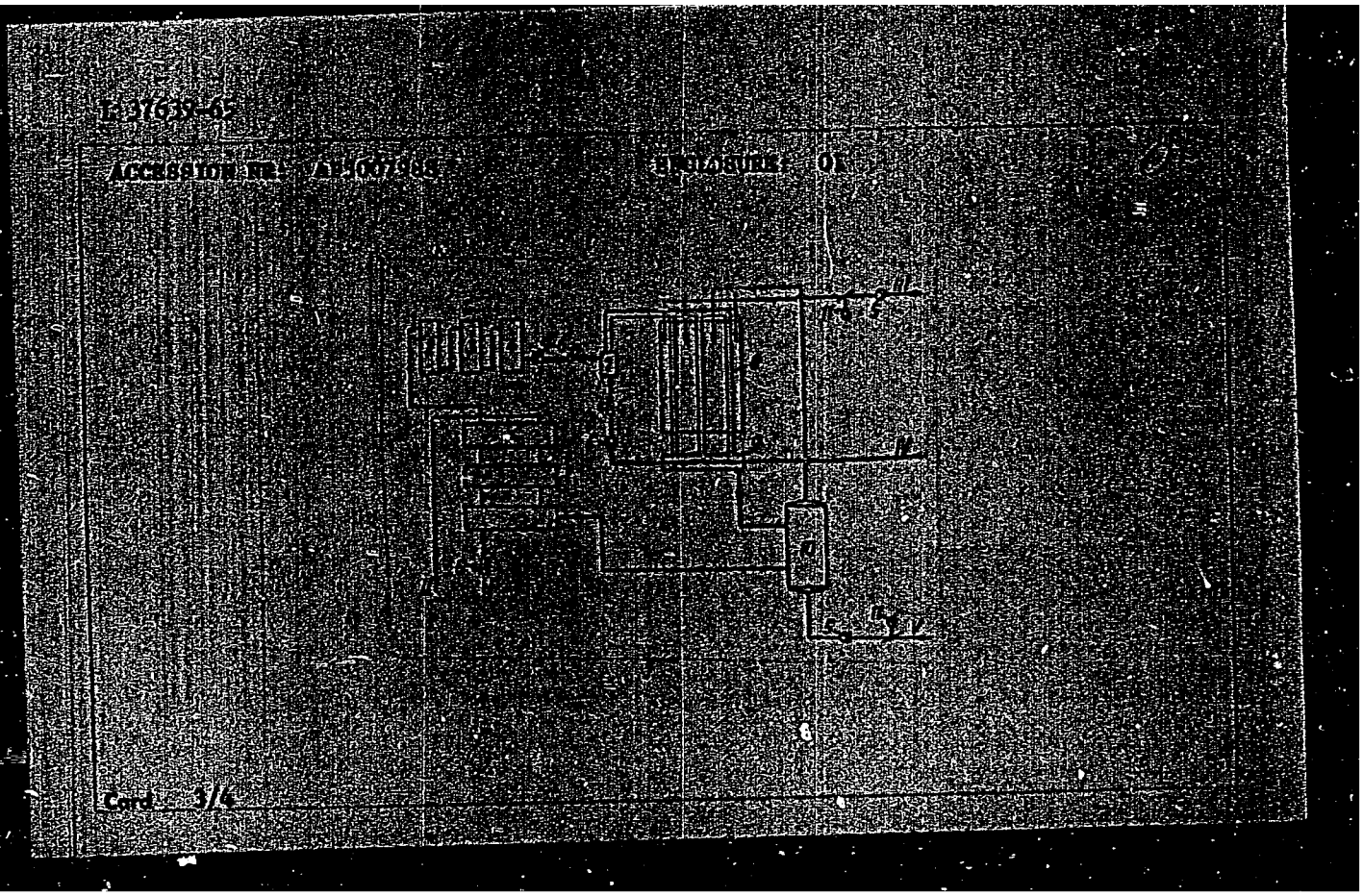

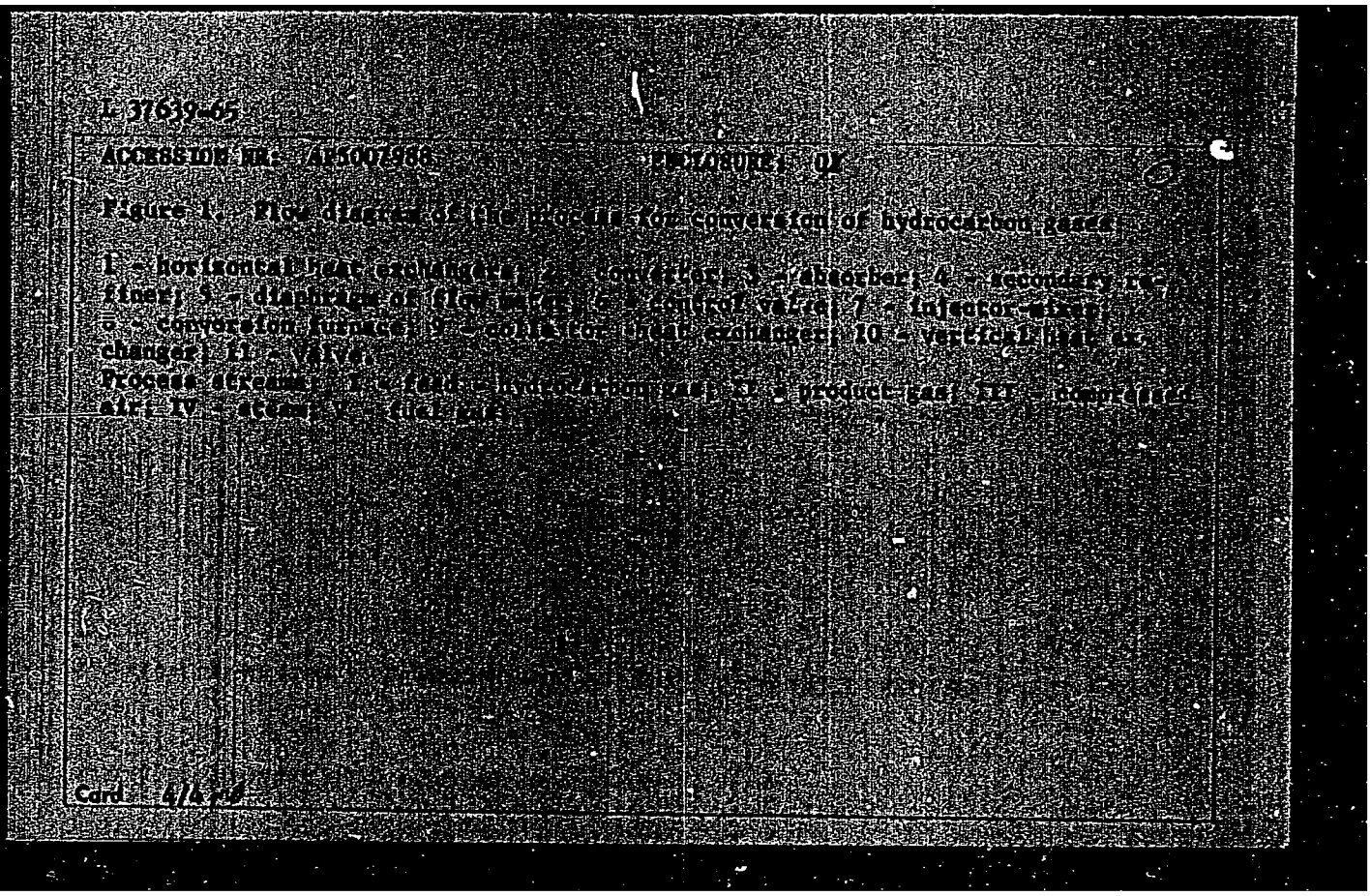

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ACCESSION NR: AP5007966 UR/0078/65/010/001/0000/0000

Figure 1. Flow diagram of the process for conversion of hydrocarbon gases

1 - horizontal heat exchanger; 2 - converter; 3 - absorber; 4 - recondenser; 5 - flow meter; 6 - diaphragm of flow meter; 7 - control valve; 8 - injector-mixer; 9 - conversion furnace; 10 - coil for heat exchanger; 11 - vertical heat exchanger; 12 - valve

Process streams: I - feed; II - hydrocarbon gas; III - product gas; IV - water; V - air; VI - steam; VII - fuel gas

Card 4/4 fb

VOLKOV, Aleksandr Pavlovich; YAGOTINTSEV, Georgiy Nikolayevich; KHUDYAKOV, V.L., red.; FEDOROV, B.M., red.izd-va; PERAKHINA, N.L., tekhn.red.

[Instruments at the Kostopol' Housing Construction Combine] Instrumental'noe khoziaistvo na Kostopol'skom domostroitel'nom kombinate. Moskva, Goslesbumizdat, 1960. 40 p. (MIRA 13:7)
(Woodworking machinery)

80674

S/153/60/003/02/22/034
B011/B006

5.1310

AUTHORS: Ivanov, B. Ye., Khudyakov, V. L.

TITLE: The Influence of the Preparation of Aluminum Surfaces for Cathodic Polarization in the Electrodeposition of Chromium

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 2, pp. 330-334

TEXT: The authors investigated the cathodic polarization in the electrodeposition of chromium on aluminum as a function of various methods of pretreatment. The investigation was carried out according to the methods by A. I. Levin and A. I. Falicheva (Ref. 11). A solution of $2MCrO_3$ + 0.04 N H_2SO_4 was used as electrolyte. The anode was made of platinum, and the cathode was composed of aluminum (99.9% Al). The aluminum specimens were washed with CCl_4 and alcohol to remove grease, and etched in a solution of alkali. Tests were carried out using a somewhat modified cell by Krasovskiy (Ref. 13). Before taking polarization curves, the specimens

Card 1/4

The Influence of the Preparation of Aluminum Surfaces for Cathodic Polarization in the Electrodeposition of Chromium

S/153/60/003/02/22/034
B011/B006

were treated in the following order: 1) etching in 5% HCl, 2) etching in a solution of 20 ml/l H_3PO_4 + 20 g/l NaH_2PO_4, 3) etching in an HF solution, 4) passivating in HNO_3 (sp. gr. 1.4), 5) anodizing in 20% H_3PO_4 at D_a = 1.3 a/dm^2 for 10 min, 6) anodizing in 20% H_2SO_4 at D_a = 1.3 a/dm^2 for 10 min, 7) anodizing in 3% oxalic acid at D_a = 1.3 a/dm^2 for 10 min, and 8) anodizing in the first-mentioned electrolyte at D_a = 1.3 a/dm^2 at 20°C and 45°C for 10 min. Potential-time curves were plotted to explain the behavior of the deposited film in the electrolyte. After serving as cathode at current densities of 10^{-5}, 10^{-4}, 10^{-3}, 10^{-2} a/cm^2 and 0.1 a/cm^2, the specimens were microphotographed. Curves thus obtained for chemically treated surfaces and for aluminum specimens oxidized in the chromium electrolyte are shown in Figs. 1 and 2. The potentials of specimens etched in dilute HCl and passivated in HNO_3 and H_2SO_4 change considerably during the first minutes after immersion in the electrolyte, but finally attain approximate-

ly the same values. This is obviously due to the destruction of the initial adsorption- and oxide films and the formation of chromate oxide films. Curves obtained for aluminum specimens pretreated in the aforementioned manner shown in Fig. 3. The authors did not obtain reproducible data for acid-etched specimens. For different acids, the potentials of chromium deposition on these specimens have the same values and lie in the interval from 0.82 v to 0.84 v (measured with respect to the normal hydrogen electrode). The potentials of chromium deposition on anodized specimens range from 0.9 v to 1.0 v, the most negative value pertaining to specimens anodized in H_3PO_4. From these findings the authors draw the conclusion that the mode of pretreatment has a strong influence on the shape of the polarization curve. Polarization curves of anodized aluminum have only one branch instead of three branches (Ref. 15). By microphotographic investigation of chromium-plated specimen surfaces, the authors found that the deposits are uniformly distributed over the surface of passivated specimens whereas they are deposited groupwise in the pores of the films on anodized specimens. There are 5 figures and 17 references, 12 of which are Soviet.

The Influence of the Preparation of Aluminum Surfaces for Cathodic Polarization in the Electrodeposition of Chromium

S/153/60/003/02/22/034
B011/B006

ASSOCIATION: Izhevskiy mekhanicheskiy institut; Kafedra obshchey khimii (Izhevsk Institute of Mechanics, Chair of General Chemistry)

SUBMITTED: July 14, 1958

Card 4/4

5.1310

77643
SOV/80-33-2-18/52

AUTHORS: Bogoyavlenskiy, A. F., Ivanov, B. Ye., Khudyakov, V. L.

TITLE: Chromium Plating of Aluminum by Superposing Alternating and Direct Currents

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 2, pp 368-372 (USSR)

ABSTRACT: The authors studied: rectifying effect of the cell with standard chromium electrolyte and aluminum cathode; polarization of aluminum cathode in the chromium electrolyte upon superposing of alternating current; effect of alternating current upon the yield; its microrigidity and strength of its adherence to the base. Figure 2 shows that the rectifying effect of the chromium electrolyte (250 g/l CrO_3 and 2.5 g/l H_2SO_4 measured at 50° for various current densities) in the cell with an aluminum anode and lead cathode is inversely

Card 1/7

proportional to the current density.

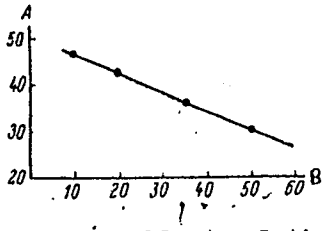

Fig. 2. Rectifying effect of the cell with the chromium electrolyte. (A) degree of current rectification (in %); (B) current density (in amp/dm^2).

Black, porous film, forming on the surface of the aluminum electrode at low current densities changes into light, well adhering film with increasing current density. After the current density reaches ~70 amp/dm^2 the aluminum electrode becomes a cathode and the rectifying effect disappears. The assembly used to obtain data for construction of

connected into the circuit of alternating current. Oscillation circuit LC was tuned for 50 cycles. Use of this assembly allowed one to vary the ratio of alternating direct current densities and to keep them constant during the taking of polarization curves. Platinum anode and aluminum cathode of composition Al, 99.894%; Si, 0.065%; Fe, 0.041%, were used. Figure 3 shows the polarization curves obtained for various ratios of alternating-direct current densities. The shape of the polarization curves led to the following explanation of the process: at an electrode potential below 0.8 v, the action of alternating current prevails, causing formation of an oxide coating on the surface of aluminum, i.e., the aluminum electrode becomes an anode, and the current density remains constant. Above 0.8 v the electrode becomes a cathode and chromium plating begins. The yield of chromium based on current depends upon the $\frac{D_{=}}{D_{\sim}}$ ratio and

Chromium Plating of Aluminum by Superposing Alternating and Direct Currents

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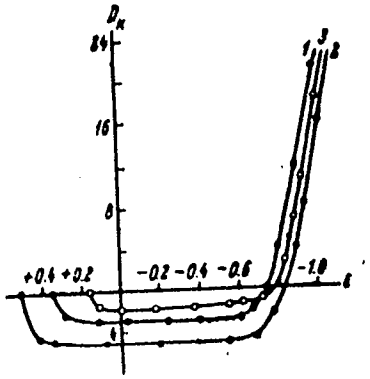
SOV/80-33-2-18/52

Fig. 3. Polarization curves obtained in superposition of alternating and direct currents. The samples were pickled in 5% solution of HCl. D_K is cathodic current density (in amp/dm^2), $\mathcal{E}$ is potential (in v). Ratio of densities of direct alternating currents $\frac{D_{\text{—}}}{D_{\sim}}$ equals 1 - 3; 2 - 2; 3 - 1.



Card 5/7

the absolute densities of the alternating and direct currents. Chromium plating starts only at a $\frac{D -}{D \sim}$ ratio of 2, with the yields equal to 11% at 10 amp/dm^2 and 10.7% at 20 amp/dm^2 (for $\frac{D -}{D \sim}$ = 3, the yields were 10.8% at 10 amp/dm^2, 12.1% at 35 amp/dm^2 and 10.2% at 70 amp/dm^2). Measurements of adherence of chromium deposits obtained in electrolysis with superposed current on the aluminum cathode pickled in 5% HCl (after preliminary degreasing it in 10% NaOH) gave poor results. Samples pickled in a mixture of 2% H_3PO_4 and HF solutions had higher (and reproducible) adherence strength up to 50 amp/dm^2. There are 3 figures; and 5 references, 2 Soviet, 1 U.K., 2 U.S. The U.S. and U.K. references are: Bunce, Bernard E., Electroplat. and Metal Spraying, 6, 317 (1953); Bunce, Bernard E., Metal Finish., 52, 70 (1954);

Chromium Plating of Aluminum by Superposing Alternating and Direct Currents

77643
SOV/80-33-2-18/52

Passal, Frank, U.S. Patent 2662054, 8, 12 (1953).

ASSOCIATION: Izhevsk Mechanical Institute (Izhevskiy mekhanicheskiy institut)

SUBMITTED: February 9, 1959

Card 7/7

24013
S/080/61/034/006/016/020
D247/D305

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1.1800

AUTHOR: Khudyakov, V. L.

TITLE: Investigation of the cathode efficiency of chromium in the chromium plating of anodized aluminum

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 6, 1961, 1367 - 1368

TEXT: The dependence of cathode efficiency of chromium on the method and conditions of anodizing was investigated. Chromium was electroplated on films produced in sulphuric, phosphoric, oxalic and chromic acids and by the carbonate method. Plating was carried out in a standard chromium plating bath of 10 l capacity at a temperature of 45°. Measurements of the cathode efficiency of chromium showed that a relationship exists between this factor and the method of film production (Fig. 1). The greatest cathode efficiency was attained when depositing chromium on a film produced in the chromic acid bath, and the least in the case of a film produced in

Card 1/5

Investigation of the cathode ...

the sulphuric acid bath. It was also found that a relationship exists between time of anodizing and cathode efficiency of chromium (Fig. 2). Porosity of the film is another factor exerting an influence on the cathode efficiency of chromium, the latter decreasing with increase in porosity. In order to elucidate the influence of the physical state of the film on the cathode efficiency of chromium, the latter was electrodeposited on dry, as well as on sealed, films produced in phosphoric and sulphuric acid solutions. The cathode efficiency of chromium deposited on dry films produced in phosphoric acid (determined after holding in a drying oven at 200° for 2 hours and above sulphuric acid fumes in a dessicator for 1 day), was found to be 11.8 %, whereas when chromium was deposited on similar films sealed with water, it was 12 %; this, allowing for experimental error, agrees with the cathode efficiency obtained in deposition on dry films. Similar results were obtained in the case of films produced in sulphuric acid (20 % H_2SO_4, CD_a = 1 A/dm^2, temperature = 20°, time = 10 minutes). It is known that sealing anodic films with water and dyes considerably alters

3786

S/080/62/035/005/001/015
D202/D307

11800

AUTHOR: Khudyakov, V. L.

TITLE: Direct chromium plating of silumin type alloys

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, 1962, 979-984

TEXT: The author studied the direct plating of alloys AL-4 and AL-2B (AL-4 and AL-3V) with silicon contents of 4 and 8% respectively, at 50°C, from a "standard" solution I (CrO_3-250 g/l, H_2SO_4-2.5 g/l) and a self-regulating electrolyte (II Cr_2O_3-250 g/l, K_2SiF_6-20 g/l and $SrSO_4$ - 6 g/l), investigating the effect of different anodic treatments of the alloy surface before plating on the yield of Cr deposits with regard to the current, and its effect on the plate adhesion, as well as that of H_2SO_4 concentration in I. The anodic treatment consisted of applying the electric current at a density of 5 - 40 amp/dm^2 to the electrolytes, using the alloy samples as an anode. Best results in respect to the yield of Cr

Card 1/2

during subsequent plating were obtained after anodic treatment for 40 sec at 22 - 26 amp/dm^2 for I and 16 - 24 amp/dm^2 for II. The author concludes that during this treatment a porous film is formed on the alloy surface, which during the plating proper has a favorable effect not only on the chromium yield but on its adhesion to the alloy surface. On samples not submitted to this treatment the adhesion is very weak, but on the treated ones it is quite satisfactory. Optimal treatment conditions with regard to the adhesion are as follows: Current density: 20 amp/dm^2 for I, and 12 - 32 amp/dm^2 for II, during 40 sec. The optimal H_2SO_4 concentration for the no. I electrolyte has been 3.5 g/l for plating after anodic treatment.

ASSOCIATION: Izhevskiy mekhanicheskiy institut (Izhevsk Mechanical Institute)

SUBMITTED: May 15, 1961

KHUDYAKOV, V.L.

Role of a zincate sublayer in a chromium plating of aluminum.
Izv.vys.ucheb.zav.;khim.i khim.tekh. 5 no.2:303-307 '62.
(MIRA 15:8)

1. Izhevskiy mekhanicheskiy institut, kafedra fiziki.
(Aluminum alloys) (Chromium plating)
(Zincates)

S/080/63/036/001/0 2/026
D204/D307

AUTHOR: Khudyakov, V.L.

TITLE: Electrodeposition of chromium on anodized aluminum

PERIODICAL: Zhurnal prikladnoy khimii, v. 36, no. 1, 1963, 114 - 121

TEXT: The present work was aimed at determining the factors affecting the rate of deposition of metallic Cr on anodized Al, completing the earlier study (ZhPKh, 34, 1367 (1961)). Electrolyte consisting of 250 g CrO_3 and 2.5 g H_2SO_4 per litre was used, at 50°C, measuring the current efficiency (η_{Cr}); the concentration of H_2SO_4 was also varied from 0.5 to 10.5 g/l. The cathode was 99.7 % Al, anodized in various conditions and by various methods. The deposited coatings were examined by microphotography and were tested for adherence to the substrate by measuring the weight of Cr left on the Al

Card 1/3

after 10 % deformation. Values of η_{Cr} were initially (after 0 - 3 min) 25 - 30 %, falling to about 7 - 13 % after 1/2 hr. This is ascribed to the actual high current densities at the beginning of deposition; it is also believed that initial crystallization takes place locally on the surface rather than in the pores of the oxide layers. No significant decrease of η_{Cr} was observed on anodized layers formed at higher voltages. On sealed anodized coatings values of η_{Cr} were not lower than on those with open pores. The range of H_2SO_4 concentrations ensuring maximum η_{Cr} varied according to the anodized layer, but were generally wide (about 2 - 8 g H_2SO_4/l). The strength of adherence was affected by the method and conditions of forming the anodized layer (maximum for layers formed in 20 % H_3PO_4, at 1 a/dm^2, at 20°C, over 5 min); continuity of the cathodic layer forming on the pre-anodized surface is particularly important. There are 4 figures and 2 tables.

ASSOCIATION: Izhevskiy mekhanicheskiy institut (Izhev Mechanical Institute)

S/080/63/036/001/012/026
Electrodeposition of chromium ... D204/D307

SUBMITTED: September 29, 1961

Card 3/3

ACCESSION NR: AT4043081 S/0000/64/000/000/0292/0309

AUTHOR: Khudyakov, V. L.

TITLE: Experimental use of anodic oxide films in the chrome plating of aluminum

SOURCE: Mezhvuzovskaya konferentsiya po anodnoy zashchite metallov ot korrozii. 1st Kazan, 1961. Anodnaya zashchita metallov (Anodic protection of metals); doklady* konferentsii. Moscow, Izd-vo Mashinostroyeniye, 1964, 292-309

TOPIC TAGS: chrome plating, aluminum chrome plating, aluminum alloy chrome plating, aluminum, silumin, preliminary anodizing, chromic acid electrolyte, single bath technique, plating deposit bond strength, anodic film thickness effect, anodizing solution effect, anodic film adsorption capacity, aluminum corrosion, anodic oxidation

ABSTRACT: Chromium was electrodeposited on various pre-anodized (sulfate, phosphate, oxalate, chromate or carbonate solutions) aluminum (0.21-0.11% Fe and Si impurities) or Silumin surfaces from a standard electrolyte (250 g/l CrO_3, 2.5 g/l H_2SO_4) or (on alloys) from self regulating (250 g/l CrO_3, 2- g/l K_2SiF_6, 6 g/l $SrSO_4$) and tetrachromate (350 g/l CrO_3, 2 g/l H_2SO_4, 40 g/l NaOH, 1 g/l sugar) electrolytes. The results indicate that carbonate and chromate anodizing produces the most resistant films; polarization curves for cathodes with anodic oxide films in a Cr electrolyte have one branch only,

Card 1/2

ACCESSION NR: AT4043081

dense cathode deposits do not form on anodic oxide films, and the adsorption properties of anodic films affect the entire process and quality of the deposit. The author theorizes that Cr ions absorbed by anodic films are reduced to metal during the initial stages of chrome plating and that the anodic film thickness, on which porosity and adsorptive capacity depend governs the strength of the bonds between the base and the chrome deposit. A technique is proposed for chrome plating of Al and its alloys after anodic treatment in the same electrolyte (5-10 min., 25-30v, AC, 4-8 a/dm^2, in 250 g/l CrO_3 and 2.5 g/l H_2SO_4 at 50C for Al; alkaline degreasing for 3-4 min. at 70C, hot and cold water rinse, 2-4 min. DC anodizing and current direction reversal for chrome plating of Al alloys). Orig. art. has: 13 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 13Mar64 ENCL: 00

SUB CODE: MM NO REF SOV: 024 OTHER: 005

Card 2/2

KHUDYAKOV, V. V.

AUTHOR: Sakovich, A.A., Candidate of Technical Sciences, Khudyakov, V.V., Candidate of Technical Sciences, Lazarev, N.S. and Barakayev, Kh.F., Engineers. 110-9-2/23

TITLE: An Investigation into the Possibility of Autonomous Supply of the Auxiliary Power Requirements of High-voltage Mercury Valves. (Issledovaniye vozmozhnostey avtonomnogo pitaniya sobstvennykh nuzhd vysokovol'tnykh rtutnykh ventiley)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.9, pp. 3 - 8 (USSR).

ABSTRACT: The rectifier/inverter sub-stations of high-voltage d.c. transmission systems use bridge-connected rectifiers whose cathodes may be at very high voltages to ground. The mercury valves require some 1 - 3 kW of auxiliary power, at cathode potential, for ignition excitation, anode heating, and electrode control. It is very difficult to supply the power at the necessary voltage, and special isolating transformers are used which often require to be connected in cascade. It has recently been proposed to tap the power from the damping circuit between the valve anode and cathode. This circuit comprises a series capacitance and resistance used as a potential divider and is usually an essential part of the converter. Control signals are

Card 1/4

An Investigation into the Possibility of Autonomous Supply of the Auxiliary Power Requirements of High-voltage Mercury Valves.

transmitted by a modulated light ray which acts on a photo-cell operating at valve potential. The method obviates an isolating transformer and is simpler and cheaper. The principles of tapping power from the damping circuit are then explained. Fig.1 shows the valve bridge of a rectifier/inverter sub-station for the d.c. Stalingrad-Donbas system. The rated voltage of the bridge is 100 kV and the transmitted current 900 A. The three-phase output of the transformer is at 83 kV. The principal operating conditions of a sub-station are considered and an expression is written for the voltage in each case. It is shown that the inverse-voltage contains only the fundamental frequency and multiples of three. The relationship between the harmonic content of the voltage and the fixing angle is shown in Fig.2 and it is concluded that a filter must be provided in order that power may be tapped from the damping circuit. The corresponding circuit is shown in Fig.3a. The only additional equipment required is a transformer with an insulation level of 10 kV. The procedure for calculating the maximum power from a tapping is described and the simplifying assumptions underlying the calculation are stated. A vector diagram for the equivalent

 circuit (Fig.3b) is used to construct graphs of the active

(Fig.4) and reactive (Fig.5) power as functions of the circuit parameters. Fig.6 gives the reactive power and the loss in the choke coil as functions of the capacitance for various values of the capacitance in the damping circuit. Hence, the useful power from the tapping is determined and it is shown that some increase in the capacitance of the damping circuit extends the useful range of power tapped. The power calculations were verified experimentally on a model of the circuit. The damping and tapping circuits were connected in parallel with a thyratron model of a power system sub-station. Voltage oscillograms were taken with firing angle values and transmitted current corresponding to the main operating conditions. The results were worked out on a scale corresponding to the Stalingrad-Donbas scheme and showed that for firing angles close to 0 or 150 (which correspond to normal transmission conditions) the voltage waveform was satisfactory. For angles near 90° the voltage waveform was very distorted. This was because of insufficiently-close tuning of the tapping circuit and non-linearity of the inductance of the choke. If the choke is linear the voltage distortion is much less. For firing angles close to 0 and 150° the tapped voltages and power are in good agreement with the

KHUDYAKOV, V.V.

AUTHOR: Venikov, V.A., Doctor of Technical Sciences, Professor, Tsov'yanov, A.N., Engineer, and Khudyakov, V.V., Candidate of Technical Sciences. 110-12-16/19

TITLE: New Sources of Reactive Power that Can be Used to Improve the Utilisation of Generators and Synchronous Compensators. (Novyye istochniki reaktivnoy moshchnosti, pozvolyayushchiye uluchshit' ispol'zovaniye generatorov i sinkhronnykh kompensatorov)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.12, pp. 59 - 64 (USSR)

ABSTRACT: The cost of alternators and synchronous compensators is higher than that of static capacitors and reactors. However, static capacitors and reactors are usually not flexible enough to replace synchronous compensators. The latter can be cheapened by simiplification of the field system, but cannot normally operate at high lagging reactive power. Valve-operated exciter circuits such as illustrated in Fig.1 help to improve matters. Changes in the region of stability that result from changes in the generator parameters are shown in Figs. 2 and 3. It is claimed that the use of electronic-ionic field regulators with high-speed regulating systems can greatly improve the operating conditions of synchronous compensators. Capacitance

Card1/4

New Sources of Reactive Power that Can be Used to Improve the Utilisation of Generators and Synchronous Compensators.

placed in series with the compensator winding reduces by 50-80% the transient impedance of the synchronous compensator, and thus improves its dynamic and static stability for given field currents, as shown in Fig.4. To make the best use of static capacitors combined with machines, it is necessary to be able to introduce the static capacitors smoothly. Until recently, this was impossible. However, capacitance can be controlled by including synchronous compensators in parallel or series with the capacitors, the synchronous machines being of relatively small output. Schematic diagrams are given in Fig.6. Such circuits call for relatively high control power but this can be reduced by connecting a capacitance in parallel with the controlled circuit, as shown in Fig.8. Brief mathematical expressions are given for the power in the various parts of the circuit and were verified by special experiments. It still remains to develop a practical rectifier-inverter scheme for the control of capacitors, and a possible circuit shown in Fig.9. The rectifier-inverter set consists of ordinary grid-controlled mercury-arc rectifiers. In operation the rectifier-inverter consumes reactive power and has a very small active load. Analytical expressions are given for
Card2/4 the reactive power. It is shown that regulation of the reactive

New Sources of Reactive Power that Can be Used to Improve the Utilisation of Generators and Synchronous Compensators.

power consumed by the rectifier-inverter set occurs because of change in the currents through the rectifier and inverter transformers. A variant of the circuit given in Fig.9 is that given in Fig.11. The circuit consists of two separate rectifiers, each of which operates in short circuit on a smoothing choke. The method of operation of the circuit is explained. Rectifiers and inverters should be very reliable in circuits such as have been described, which can also be used to realise Taylor's proposal to stabilise a transmission line. Here, special series-parallel transformers convert the capacitative current of the line and the corresponding reactive power into reactive power to compensate the reactive voltage drop in the line; Fig.12A shows the scheme.

The authors, having re-examined the distribution of sources of reactive power within a transmission system, also consider the possibility of using such devices to relieve generators of reactive power. The use of alternators to generate reactive power has developed historically but other approaches are now possible. For example, a circuit such as that shown in Fig.13 could be used. Moreover, with alternative sources of reactive power, it would be possible to use asynchronous generators in

New Sources of Reactive Power that Can be Used to Improve the Utilisation of Generators and Synchronous Compensators.

in power stations.
The article does not claim to describe developed industrial designs; it is based only on preliminary theoretical investigations verified on a laboratory scale and is presented to promote discussion. Details of the circuit proposed may be questionable, and certainly need serious development, but, undoubtedly, electronic-ionic techniques, automatic control and capacitor manufacture are now sufficiently advanced to make possible the introduction of new elements into heavy current technology.
There are 13 figures and 3 references, 2 of which are Slavic.

ASSOCIATION: MEI and VEI

AVAILABLE: Library of Congress.

Card 4/4

SOV/110-58-7-19/21

AUTHOR: Professor Venikov, V.A., Dr. Tech. Sci., Tsov'yanov, A.N., Engineer, and Khudyakov, V.V., Cand. Tech. Sci.

TITLE: On the question of new sources of reactive power that may be used to improve the utilisation of generators and synchronous condensers.
(K voprosu o novykh istochnikakh reaktivnoy moshchnosti, pozvolyayushchikh uluchshit' ispolzovaniye generatorov i sinkhronnykh kompensatorov)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, Nr 7, pp 66-70. (USSR)

ABSTRACT: This is a general reply to discussions, including that published with the article in Vestnik Elektropromyshlennosti Nr 12, 1957, and those published in this number. Most contributors consider the proposed system promising although practical verification of the circuits is not yet complete and economic considerations cannot yet be fully worked out. Likewise it is still premature to make the economic evaluation proposed by certain contributors, but

Card 1/4

On the question of new sources of reactive power that may be used to improve the utilisation of generators and synchronous condensers.

an approximate economic assessment is given in an Appendix. Tests have shown that the controlled valves in the a.c. circuit are the controlling link and can alter the instant of application of voltage and the time of flow of current in the circuit during each cycle. Oscillograms have shown that over-voltages and valve overloading do not occur when the regulation is being applied to reactive power in circuits with active or inductive impedance. It is very desirable that the Moscow Power Institute, the All-Union Electrotechnical Institute and others should go into the whole question. The article gives only the fundamentals and laboratory models of the circuits proposed for the installation, and of course further development is required. Nevertheless the proposed method is promising. Certain variants of the circuit that have been proposed in the discussion have obvious defects, but some other remarks are very helpful. Harmonic analysis of the current in a

On the question of new sources of reactive power that may be used to improve the utilisation of generators and synchronous condensers.

controlled reactor is given in Fig. 2, it assumes that the angle of regulation is zero and that the valves are fully conductive. This analysis shows that in practice it will only be necessary to compensate for the third harmonic. Yenin and Libkind very correctly suggested other possible ways of achieving the desired object. However, a disadvantage of devices involving sub-magnetisation of transformers or reactors is the rather large time-constant, which must be greater than that of an ionic valve compensator; therefore, circuits with controlled valves are preferable. Libkind's proposal to reduce the time-constant of sub-magnetisation is worthy of attention. Yenin's proposal to use a double-bridge circuit will complicate the equipment and increase losses; moreover, Yenin's equipment can only operate over a limited range of power-factor. Nevertheless, these two circuits are both worth further careful study. Many of the objections raised by Academician M.P. Kostenko, Professor D.A. Zavalishin and Candidate of Technical Science I.A. Glebov, result from incorrect consideration of the circuit

On the question of new sources of reactive power that may be used to improve the utilisation of generators and synchronous condensers

proposed, and their objections are met. It is no accident that power engineers are now interested in this question, and early use should be made of the proposed equipment. However, it should be noted that the change in output of reactive power obtained by changing only the characteristics of a controlled reactor or transformer cannot ensure the necessary balance of reactive power in a system: the development of an ionic compensator is a separate and important task, which can be solved. Only the use of inertialess reactive power can make electric power systems stable. The advantages of ionic compensators are again summarised. An appendix contains an approximate cost estimate for an ionic compensator compared with a synchronous condenser and it is shown that they are about the same. There are 4 figures, and 2 references both of which are Soviet.

Card 4/4

1. Capacitors--Performance 2. Generators--Performance 3. Power supplies--Sources

S/110/60/000/011/005/012
E194/E484

AUTHORS: Voskresenskiy, V.V., Candidate of Technical Sciences and Khudyakov, V.V., Candidate of Technical Sciences

TITLE: The Use of an Electronic Integrator Type ИПТ-5 (IPT-5) and a Physical Model to Investigate Transient Processes in d.c. Transmission

PERIODICAL: Vestnik elektropromyshlennosti, 1960, No.11, pp.48-53

TEXT: The practical possibility of constructing 200 kV transmission lines has been demonstrated by operating experience with the Kashira-Moscow line which commenced operation in 1950. The equipment on the line is briefly described. Normal operating processes in this transmission line are now sufficiently well understood, the greatest difficulties were encountered in overcoming over-voltages on individual parts of the sub-stations that resulted from various transient phenomena. It was accordingly necessary not only to investigate the main steady state and transient processes in the transmission but also to be able to calculate them. Accordingly, in 1954 a physical model of the Kashira-Moscow transmission system was constructed in the All-Union Electro-Technical Institute, a schematic diagram is given in Fig.1.

Card 1/4

S/110/60/000/011/005/012
E194/E484

The Use of an Electronic Integrator Type ИПТ-5 (IPT-5) and a Physical Model to Investigate Transient Processes in d.c. Transmission

The number of rectifier bridges in the model was double that in the original, the scale factors for current and voltage are 1/100 and the impedance scale is 1/1. The full scale mercury valves were represented by gas thyratrons type ТГ1-5/3 (TG1-5/3) and the other equipment is briefly described. The circuit for each test is made up on a switchboard and there is a centralized control panel. A photograph of the model is shown in Fig.2. The model was used to repeat investigations of normal and emergency operating conditions previously made in the Over-Voltage Laboratory of the All-Union Electro-Technical Institute and also on the Kashira-Moscow Transmission Line. The model was able to reproduce the main conditions of d.c. transmission with sufficient accuracy. However, for all-round study of transient processes in the system, particularly with allowance for control devices, it is necessary to combine the methods of physical and mathematical modelling. For this purpose an electronic integrator type IPT-5 was used and, for convenience, it was arranged in two mobile units. The main components are illustrated in Fig.3. The process of switching a

Card 2/4

S/110/60/000/011/005/012
E194/E484

The Use of an Electronic Integrator Type ИПТ-5 (IPT-5) and a Physical Model to Investigate Transient Processes in d.c. Transmission

rectifier on to an open circuit line with and without allowance for non-linearity of the smoothing reactor was investigated and also switching of the rectifier on to a line loaded by an invertor. A diagram of the model used for these tests is shown in Fig.4a and the equivalent circuit in Fig.4b. The circuits are briefly described. If allowance is not made for non-linearity of the characteristics of the smoothing reactors all the inductances of the circuit are united into one but when the non-linearity is allowed for the inductances in the two halves of the circuit are separated. The process of switching the rectifier on to an open circuit line is considered and Eq.(1) is derived for the transient process. The structural diagram to represent Eq.(1) on the integrator is given in Fig.4B. The curve of voltage as function of time obtained by solving the equation on the integrator is given in Fig.5a which also gives the experimental curve obtained on a physical model of the transmission line. Agreement is good. The difference between the curves at the end of the process is due to the circumstance that non-linearity of the smoothing reactor was

S/110/60/000/011/005/012
E194/E484

The Use of an Electronic Integrator Type ИПТ-5 (IPT-5) and a Physical Model to Investigate Transient Processes in d.c. transmission

not allowed for. In order to allow for the non-linearity of the reactor the approximate curve consisting of straight line sections shown in Fig.5b was used and a system of equations (1) was formulated for each section of constant inductance. In considering the process of switching the rectifier on to a line loaded by an invertor the circuits of Fig.4a and b were used. The system of Eq.(2) is given to represent the case, the structural diagram for solving these equations on the integrator is given in Fig.4в. The process calculated by the integrator was compared with test results and the envelopes of the damping curves of voltage on the transmission line are given in Fig.5B. The processes under consideration were also calculated analytically and comparison of the results of the calculation with those obtained on the integrator shows that the error of the integrator is 4 to 5%. It is concluded that transient processes in a d.c. transmission system can be calculated with sufficient accuracy on an integrator whether or not allowance is made for non-linear elements of the circuit. There are 5 figures and 2 Soviet references.

SUBMITTED: February 8, 1960

Card 4/4

S/196/63/000/002/024/026
E194/E155

AUTHORS: Gilim, A.S., Zhilkin, P.S., Lazarev, N.S., Khudyakov, V.V., and Yanvarev, A.I.

TITLE: A grid-control system for a thyratron rig of a 12-phase rectifier

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.2, 1963, 5, abstract 2 K 24. (Dokl. 4-y Mezhvuz. konferentsii po primeneniyu fiz. i matem. modelirovaniya v razlichn. otraslyakh tekhn. Collection 4. (Reports of the 4th Intercollegiate Conference on the Application of Physical and Mathematical Modeling in various Branches of Technology. Collection 4). Moscow, 1962, 433-442).

TEXT: Existing grid-triggering systems for the control of thyratrons and mercury valves are briefly analysed. Disadvantages of the electromagnetic and electronic systems are noted and the requirements applicable to valves of multi-phase rectifiers are formulated. A semiconductor system of grid control of mercury thyratrons developed by the authors is described. It is based on

Card 1/3

A grid-control system for a thyratron.. S/196/63/000/002/024/026
E194/E155

the principle of combining the functions of phase displacement and peak formation into a common unit. The phase displacement part forms a saw-tooth waveshape voltage with steep front and flat straight tail. The phase of impulse formation, which controls the peak-generating circuit, is determined by the instant of coincidence between the instantaneous value of the saw-tooth voltage and the voltage of the d.c. control signal. The phase of the triggering impulse may be altered by changing the value of the control voltage. The saw-tooth voltage generator is based on a circuit with a single semiconductor triode and RC-chain. The signal corresponding to the difference between the saw-tooth and control voltage is amplified in a single stage on a semiconductor triode whose impulse is differentiated by a transformer. The narrow impulse obtained by differentiation controls the starting of a multi-vibrator with a single stable condition. The multi-vibrator forms a rectangular triggering signal, whose duration may be controlled by altering the C and R parameters in the phase chain of the first semiconductor triode, since the signal is formed in an unstable condition of the multi-vibrator. To avoid interrupting the operation of the multi-vibrator at the instant of

A grid-control system for a thyratron.. S/196/63/000/002/024/026
E194/E155

blocking of the output amplifier, a divider cascade in the form of an amplifier operating in key condition is inserted between them. The divider cascade can be used to measure and adjust the output parameters of the control unit for triggering impulses with the output amplifier blocked. The output amplifier applies triggering impulses through the divider impulse transformer to the thyratron grid circuits. The voltages in different sections of the circuit are applied from eight different rectifiers based on semiconductor diodes each in three-phase bridge circuit. The system is constructed as 3-channel units, each to control the grids of three thyratrons. Tests on the system showed it to be practically without inertia. The control angle does not alter on changing the synchronizing voltage by 50% or on changing the supply voltage from +10 to -20%.
3 figures. 2 references.

[Abstractor's note: Complete translation.]

Card 3/3

KHUDYAKOV, V.V., kand.tekhn.nauk; RAKOVA, N.K., inzh.; LAZAREV, N.S., inzh.

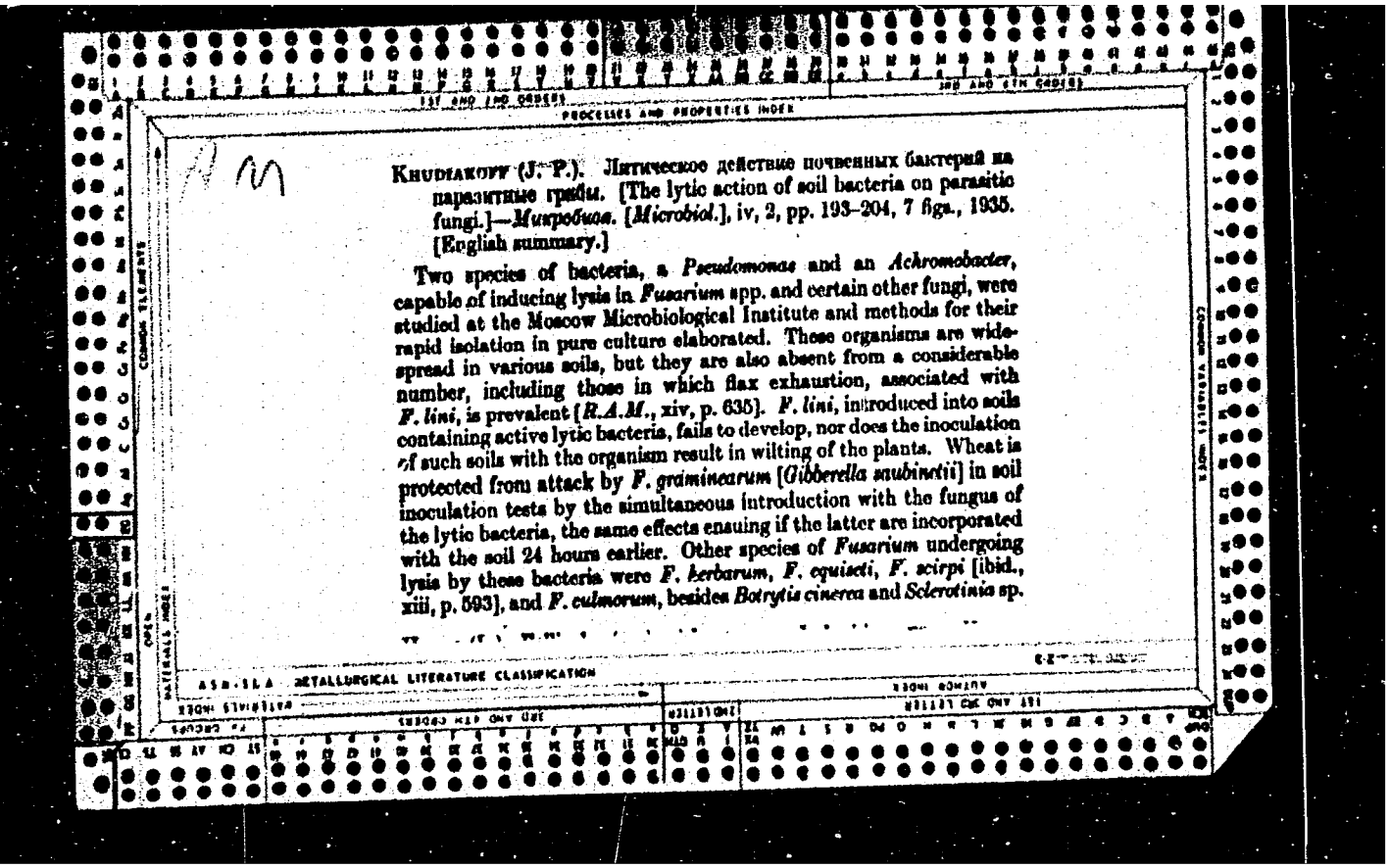
Simulation of the power transformers of a d.c. power transmission system. Vest. elektroprom. 33 no.7:20-26 Jl '62. (MIRA 15:11)
(Electric transformers)
(Electric power distribution--Direct current)

LAZAREV, N.S., inzh.; MAMSUROV, A.Kh., inzh.; KHUDYAKOV, V.V., kand. tekhn.nauk

Simulation of the forced magnetization of the core of a transformer operating with a rectifier load. Vest. elektroprom. 34 no.4: 26-31 Ap '63. (MIRA 16:10)

STEL'MAKH, G.S., inzh.; KHUDYAKOV, V.Yo., inzh.

Cassette formwork without bolts. Transp. stroi. 15 no.6:
51-52 Je '65. (MIRA 18:12)



PROCESSES AND PROPERTIES INDEX

KHUDIAKOFF (J. P.). Литическое действие почвенных бактерий на паразитные грибы. [The lytic action of soil bacteria on parasitic fungi.]—*Микробиол.* [*Microbiol.*], iv, 2, pp. 193–204, 7 figs., 1935. [English summary.]

Two species of bacteria, a *Pseudomonas* and an *Achromobacter*, capable of inducing lysis in *Fusarium* spp. and certain other fungi, were studied at the Moscow Microbiological Institute and methods for their rapid isolation in pure culture elaborated. These organisms are widespread in various soils, but they are also absent from a considerable number, including those in which flax exhaustion, associated with *F. lini*, is prevalent [*R.A.M.*, xiv, p. 635]. *F. lini*, introduced into soils containing active lytic bacteria, fails to develop, nor does the inoculation of such soils with the organism result in wilting of the plants. Wheat is protected from attack by *F. graminearum* [*Gibberella saubinetii*] in soil inoculation tests by the simultaneous introduction with the fungus of the lytic bacteria, the same effects ensuing if the latter are incorporated with the soil 24 hours earlier. Other species of *Fusarium* undergoing lysis by these bacteria were *F. herbarum*, *F. equiseti*, *F. scirpi* [ibid., xiii, p. 593], and *F. culmorum*, besides *Botrytis cinerea* and *Sclerotinia* sp.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KHUDIAKOV, Ya. P.

KHUDIAKOV, Ya. P. "The Lytic Action of Soil Bacteria on Fusarium," Buillleten' Moskovskoi Obshchestva Ispytatelei Prirody, Otdel Biologicheskii, Novaia Seriia, vol. 44, no. 6, 1936, pp. 324-327. 511 M85

SO: SIRA 90-53, 15 Dec. 1953